REMARKS

This application has been carefully reviewed in light of the Office Action dated September 9, 2008. Claims 6-7 remain in this application. Claim 6 is the independent Claim. Claim 6 has been amended. Claims 1-5 have been canceled, without prejudice. It is believed that no new matter is involved in the amendments or arguments presented herein.

Reconsideration and entrance of the amendment in the application are respectfully requested.

Art-Based Rejections

Claims 6 and 7 were rejected under 35 U.S.C. § 102(b) over Japanese Patent Publication No. JP 2001-310344 (Hase) and rejected under § 102(b) over Japanese Patent No. 10-235784 (Sugitani).

Applicant respectfully traverses the rejections and submits that the claims herein are patentable in light of the clarifying amendments above and the arguments below.

The Hase et al. Reference

Hase et al. is directed to a laminated sheet suitable as a flexible substrate material. The coefficient of linear expansion of the protective material is set to 100 ppm/degree C or below *(See Hase; Abstract and Paragraph [0005] and [0017]).*

The Sugitani et al. Reference

Sugitani et al. is directed to a flexible polyimide printing circuit. Infrared and far-infrared heating at a temperature of 150 degrees C suppresses the rate of dimensional change to ± 0.05 *(See Sugitani; Abstract and Paragraph [0007]).*

The Claims are Patentable Over the Cited References

The present application is generally directed to a heat resistant flexible laminate.

As defined by amended independent Claim 6, a heat resistant flexible laminate includes a step of laminating a heat resistant adhesive material and a metallic foil by thermal lamination in a temperature range of not less than 200 degrees C. A film-like protective material is disposed between a pressurized surface and the metallic foil at the time of thermal lamination. Coefficients of linear expansion of the heat resistant adhesive material and the protective material in a temperature range of 200 degrees C to 300 degrees C are within a range of $\alpha_0 \pm 10$ ppm/degree C, when a coefficient of linear expansion of the metallic foil is defined as α_0. The metallic foil is a rolled copper foil or an electrolytic copper foil.

Applicant notes that the α_0 of claim 6 has been clarified by identification of the metallic foil.

The applied references fail to disclose or suggest the above features of the claims of the present invention. In particular, the applied references fails to disclose or suggest "thermal lamination in a temperature range of not less than 200 degrees C," as required by amended independent Claim 6 of the present invention.

The present Specification discloses that the coefficients of linear expansion of the metallic foil, heat resistant adhesive material and the protective material is controlled by, for example, adjustment of a thickness and charge of fillers, etc. In particular, Applicant's Specification at Paragraph [0065] teaches that the coefficient of linear expansion in materials is controlled by the adjustment of thickness. However, as one of ordinary skill in the art would appreciate, the mere selection of a material does not necessarily and inherently teach Applicant's claimed linear expansion coefficients.

The present Specification provides an illustrative comparison of the importance of the coefficient of linear expansion. Applicant notes that page 4 of the Office Action asserts that Comparison Example 2 and Example 1 fails to measure the coefficient of linear expansion of the heat resistant adhesive material and the protective material. Applicant respectfully disagrees. In particular, Example 1 discloses a heat resistant

adhesive material having a thickness of thermoplastic polyimide of 4 μm and coefficient of linear expansion of 20 ppm/degree C while the protective material exhibits a coefficient of linear expansion of 16 ppm/degree C. Both these values are within ± 10 ppm/degree C of the coefficient of linear expansion of the metallic foil (19 ppm/degree C). Accordingly, as shown in Table 1, Example 1 shows a desirable dimensional stability within ± .05%, a good visual appearance without wrinkling, and a high adhesive strength of 1.0 kgf/cm.

In contrast, Comparative Example 2 discloses a thickness of thermoplastic polyimide of 8 μm and a coefficient of linear expansion for the heat resistant adhesive material as 32 ppm/degree C, as well as coefficients of linear expansion of 16 and 19 for the metallic foil and protective material, respectively. The metallic foil and heat resistant adhesive material have a difference in linear expansion coefficients of more than 10 ppm/degree C that is outside Applicant's claimed ranges and exhibits poor dimensional stability of ±0.30% and a lower adhesive strength of 0.8 kgf/cm compared to Example 1. A clarifying table is provided below:

	The heat resistant adhesive material	CTE of the heat resistant adhesive material	CTE of the protective material	CTE of the metal foil
Example 1	4μm of SE1/HP/4μm of SE1	20 ppm/degree	16 ppm/degree	19 ppm/degree
Comparative Example 2	8μm of SE1/HP/4μm of SE1	32 ppm/degree	16 ppm/degree	19 ppm/degree
Comparative Example 1	4μm of SE1/HP/4μm of SE1 (same as Example 1)	20 ppm/degree	40 ppm/degree	19 ppm/degree

SE1; thermoplastic polyimide layer of Synthetic Example I
SE2; thermoplastic polyimide layer of Synthetic Example 2
HP; Apical 17HP

As shown above, the coefficient of linear expansion of protective material, which must eventually be peeled off, affects the properties of the laminate in the comparison between Example 1 and Comparative Example 1. Furthermore, Applicant's Paragraph

[0049] teaches that a rolled copper foil is used in Example 1 and a electrolytic copper foil is used in Example 4 as the metal foil. Example 1 teaches 19 ppm as the coefficient of linear expansion of the rolled copper foil and Example 4 discloses 18 ppm as the coefficient of linear expansion of the electrolytic copper foil.

Thus, the coefficient of linear expansion is not inherently based solely on the type of material selected. The thicknesses of the materials changes the linear expansion coefficients of those materials. Consequently, the coefficient of linear expansion as defined by Claim 6 is a structural parameter based on thickness that cannot be construed as simply an inherent property of a material. This feature provides the present invention with the benefit of reducing dimensional changes and visual defects for lamination temperatures over 200 degrees C through the adjustment of thickness for a heat resistant adhesive material that correspondingly alters the relationship of the coefficients of linear expansion of the materials.

Hase merely teaches the selection of a coefficient of linear expansion of the protective material as 100 ppm/degree C or below *(See Hase; Paragraph [0005] and [0017]).* Applicant's comparative range of linear expansion coefficients based on thicknesses between a protective material and adhesive material is clearly not shown by Hase.

Moreover, Sugitani merely discloses infrared and far-infrared heating at a temperature of 150 degrees C to suppress the rate of dimensional change to ± 0.05%. However, in thermal lamination applied to laminated materials, insulating films, a metallic foil, and an adhesive film of less than 200 degrees C, visual defects such as wrinkling does not generally occur *(See Specification; Paragraphs [0005]-[0011]).* However, thermally fusible materials provided as the adhesive material, such as thermoplastic polyimides, usually require elevated temperatures of more than 200 degrees C and produce much larger dimensional changes and visual defects that have not been solved by the prior art. Thus, Sugitani merely addresses the control of dimensional change where such changes are easy to control. Sugitani fails to disclose

or suggest dimensional change where the laminating temperatures are over 200 degrees C. In view of Applicant's disclosure, the dimensional change of Sugitani would almost certainly be higher than ±0.05% at a temperature greater than 200 degrees C. Conventional solutions, including Sugitani, do not address this problem nor appreciate Applicant's solution.

Applicant respectfully submits that M.P.E.P § 2113 requires that the process steps be considered in patentability when they would be expected to impart distinctive structural characteristics to the final product. For example, amended independent Claim 6 is directed to solving the problem of dimensional change at a temperature of not less than 200 degrees C that is necessary for laminating thermally fusible adhesive materials. This step clearly results in a distinctive structural feature, as temperatures below 200 degrees C are inadequate for laminating thermally fusible adhesive materials. Applicant notes that Claim 6 has been amended to clearly recite thermal lamination in a temperature range of not less than 200 degrees C. Therefore, the Claims should be read in view of the step of heating at a laminating temperature above 200 degrees C of which the product formed from the process of Sugitani fails to disclose or suggest.

Thus, neither Hase nor Sugitani disclose, teach or even suggest these features of the present invention as required by amended independent Claim 6.

Since the cited references fail to disclose, teach or suggest the above features recited in amended independent Claim 6, these references cannot be said to anticipate nor render obvious the invention which is the subject matter of that claim.

Accordingly, amended independent Claim 6 is believed to be in condition for allowance and such allowance is respectfully requested.

The remaining claims depend either directly or indirectly from amended independent Claim 6 and recite additional features of the invention which are neither

disclosed nor fairly suggested by the applied references and are therefore also believed to be in condition for allowance.

Conclusion

Applicant believes the foregoing amendments comply with requirements of form and thus may be admitted under 37 C.F.R. § 1.116(b). Alternatively, if these amendments are deemed to touch the merits, admission is requested under 37 C.F.R. § 1.116(c). In this connection, these amendments were not earlier presented because they are in response to the matters pointed out for the first time in the Final Office Action.

Lastly, admission is requested under 37 C.F.R. § 1.116(b) as presenting rejected claims in better form for consideration on appeal.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (310) 785-4721 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
HOGAN & HARTSON L.L.P.

Date: March 9, 2009

By: _____
Dariush G. Adli
Registration No. 51,386
Attorney for Applicant(s)

1999 Avenue of the Stars
Suite 1400
Los Angeles, CA 90067
Phone: (310) 785-4600
Fax: (310) 785-4601